

JUnit A Cook's Tour

: JUnit 3.8.x .

1.

(Test Infected : Programmers Love Writing Tests, Java Report, July 1998, Volume 3, Number 7)
가
가
JUnit
가 가
(,)
가

2.

JUnit ?
, 가 가 가
가 가 가
가 가
가 , ,
가 가 ?
, PM !!
가 가
가
1 5
가

Setup	Fixture	Fixture
-------	---------	---------

3. JUnit

JUnit ("Patterns Generate Architectures", Kent Beck Ralph Johnson, ECOOP 94) 가 JUnit

3.1 - TestCase

TestCase

-
-
-

가

()

Command (Gamma, E., et al. Design Patterns : Elements of Reusable Object-Oriented Software, Addison-Wesley, Reading, MA, 1995)

"

"execute"

TestCase

```
public abstract class TestCase implements Test
{
    ...
}
```

Test "public abstract"

TestCase TestCase class 가

```
public abstract class TestCase implements Test
{
    private final String fName;

    public TestCase (String name) {
        fName = name;
    }
}
```

```
}

public abstract void run ();
...
}
```

JUnit
가
가
가
(Gamma, E., Applying Design Patterns in Java, in Java Gems, SIGS Reference Library, 1997)
1 TestCase



3.2 Blanks to fill in - run()

fixture
" TestCase abstract 가 subclassing TestCase
가 super class
test fixture fixture
fixture 가 fixture 가
가
" 가
가 fixture(setup and teardown)
fixture 가 가

```
public void run()
{
    setUp();
    runTest();
    tearDown();
}
```

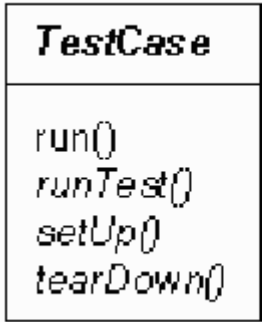
```
protected void runTest()
{
    ...
}
```

```
protected void setUp()
{
    ...
}
```

```
protected void tearDown()
{
    ...
}
```

setUp tearDown

2



Template Method

3.3 Reporting results - TestResult

TestCase가 forest	가	?	.
가	.	.	.
가		TestCase	flag
가	flag	.	.

```
Smalltalk (Beck, K. Smalltalk , Prentice Hall, 1996)
Collecting Parameter .
가
.
TestResult .
```

```
public class TestResult extends Object
{
    protected int fRunTests;
    public TestResult ()
    {
        fRunTests = 0;
    }
}
```

```

    def run(self) -> TestResult:
        """
        TestCase.run() 가 TestResult 가
        """

```

```
public void run (TestResult    ) {
    result.startTest (this);
    ();
    runTest ();
    tearDown ();
}
```

TestResult

```
public synchronized void startTest (Test test)
{
    fRunTests ++;
}
```

```

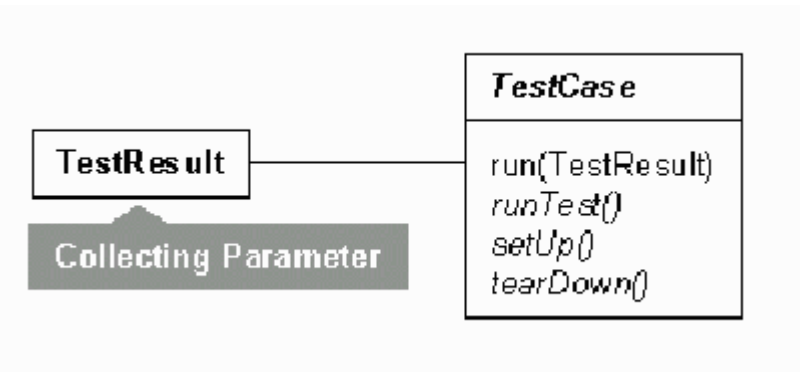
가
TestResult startTest synchronized .
TestCase
가 run() .
TestResult

```

```
public TResult run () {
    TResult      = createResult ();
    (    );
    ;
}
```

```
protected TResult createResult () {
    return new TResult ();
}
```

3



가

가

JUnit
가 assertions
ArrayIndexOutOfBoundsException
AssertionFailedError
가 catch (1)
(2)

```
public void run(TestResult result)
{
    result.startTest(this);
    setUp();
    try{
        runTest();
    }
    catch(AssertionFailedError e){// 1
        result.addFailure(this, e);
    }
    catch(Throwable e){// 2
        result.addError(this, e);
    }
    finally{
        tearDown();
    }
}
```

AssertionFailedError TestCase assert
JUnit assert
가

```
protected void assertTrue (boolean condition)
{
    if(!condition)
```

```
        throw new AssertionError();
    }
}
```

AssertionFailedError (TestCase)가
TestCase.run() AssertionFailedError

```
public class AssertionError extends Error
{
    public AssertionError () {}
}
```

TestResult

```
public synchronized void addError (Test test, Throwable t)
{
    fErrors.addElement (new TestFailure (test, t));
}
```

```
public synchronized void addFailure (Test test, Throwable t)
{
    fFailures.addElement (new TestFailure (test, t));
}
```

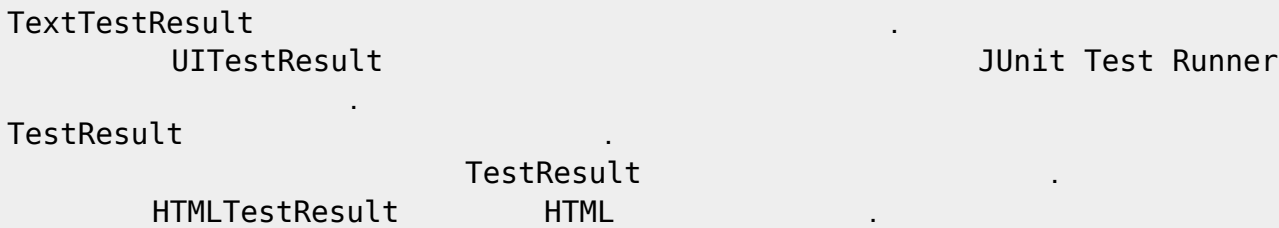
TestFailure
helper class

```
public class TestFailure extends Object
{
    protected Test fFailedTest;
    protected Throwable fThrownException;
}
```

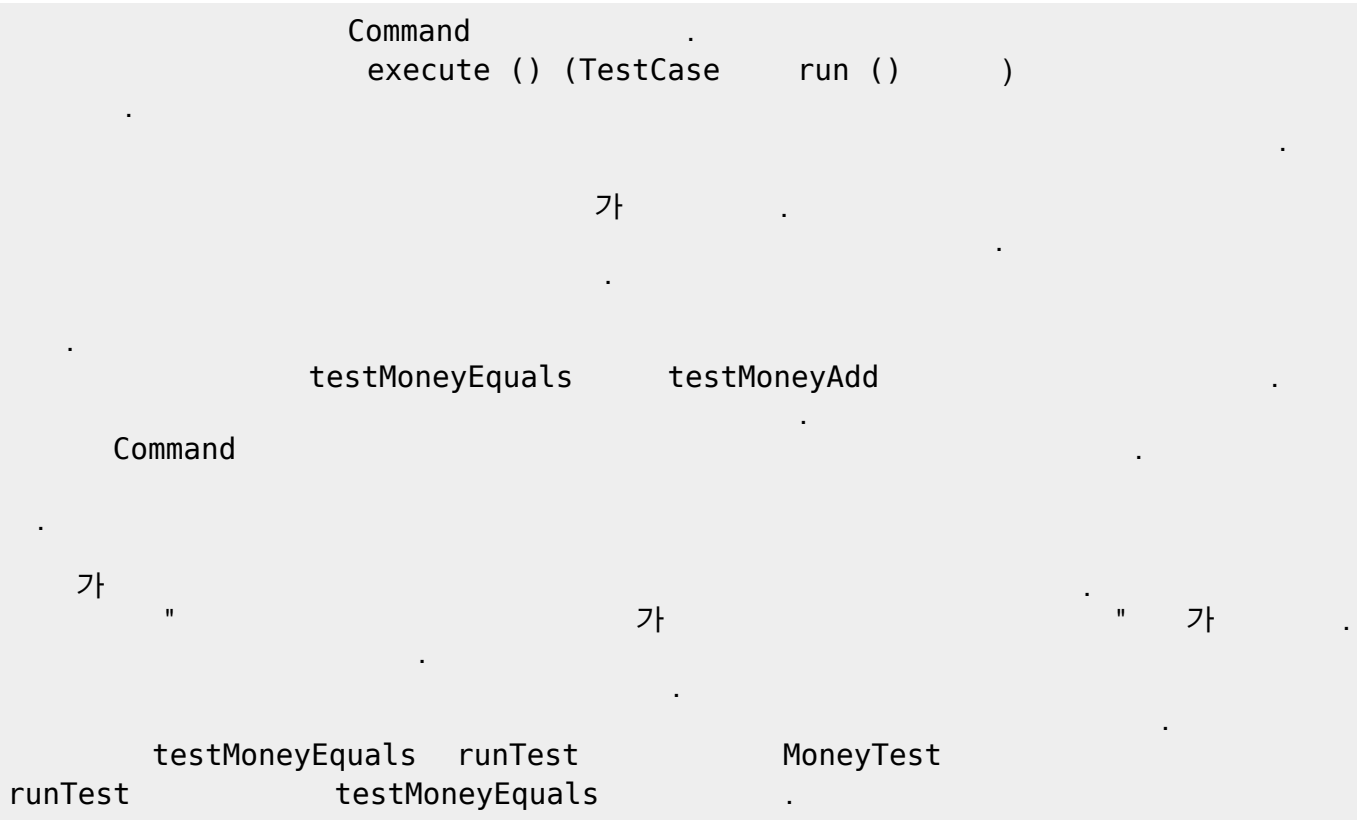
TestResult 가
" " .
TestResult
throw
MoneyTest
TestResult 가

```
public void testMoneyEquals () {
    assertTrue (! f12CHF.equals (null));
    assertEquals (f12CHF, f12CHF);
    assertEquals (f12CHF, new Money (12, "CHF"));
    assertTrue (! f12CHF.equals (f14CHF));
}
```

JUnit TestResult



3.4 -TestCase



```
TestMoneyEquals MoneyTest {
public TestMoneyEquals () {super ( "testMoneyEquals"); }
runTest () {testMoneyEquals (); }
}
```



```
TestCase test = new MoneyTest ( "testMoneyEquals") {
protected void runTest () {testMoneyEquals (); }
```


};

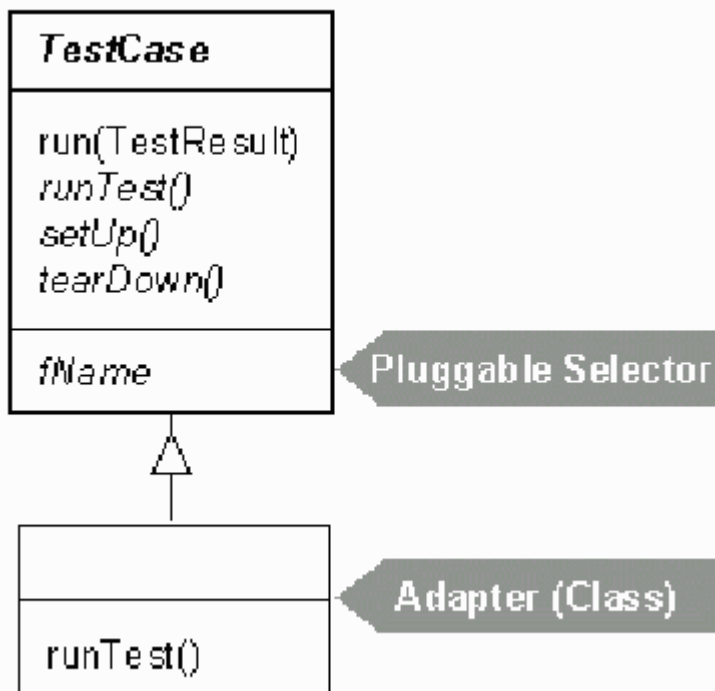
```

가
Pluggable Selector
Smalltalk
. Java
Java
API
Java
,
JUnit
runTest
Method
가

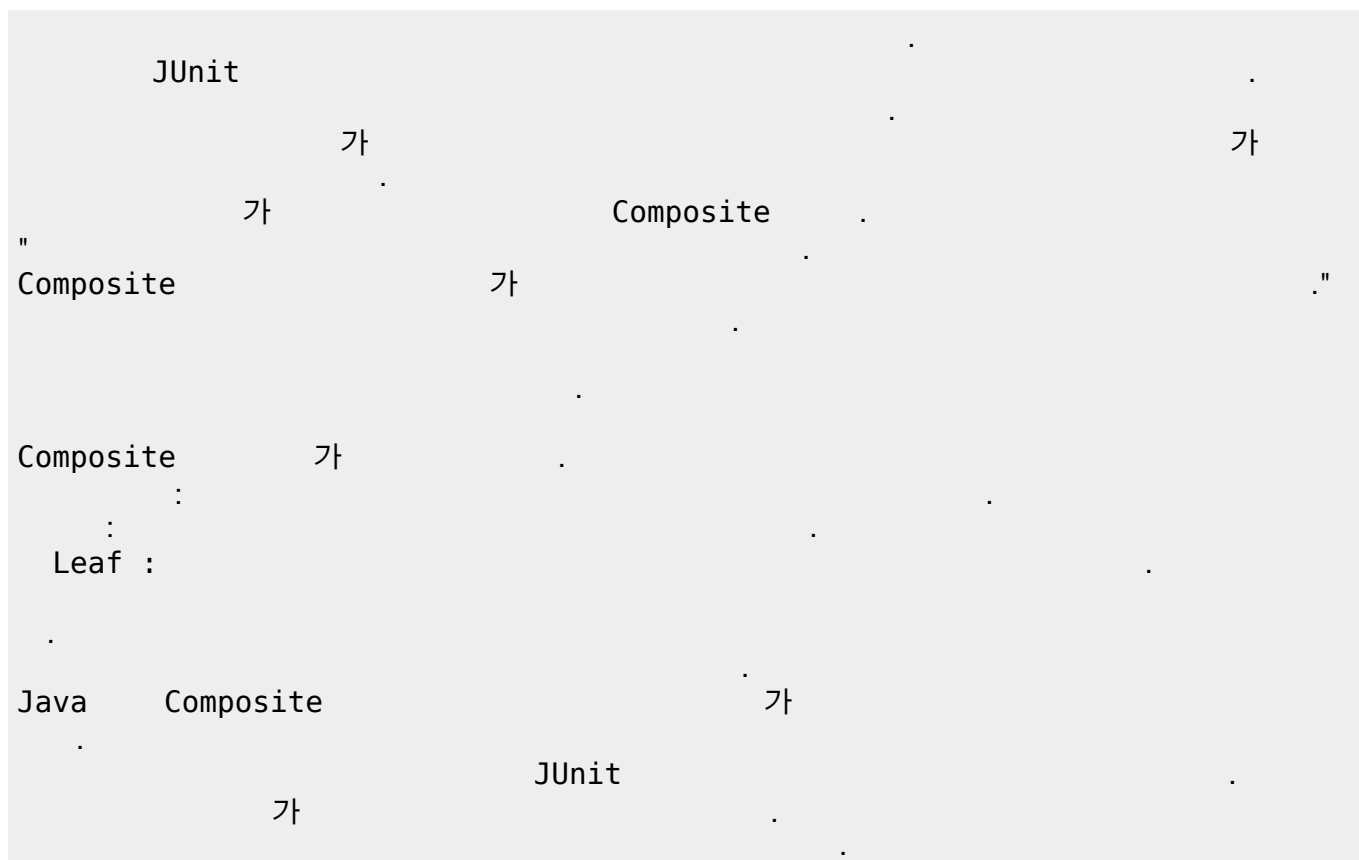
```

```
protected void runTest () throws Throwable {
    Method runMethod = null;
    try {
        runMethod = getClass (). getMethod (fName, new Class [0]);
    } catch (NoSuchMethodException e) {
        assertTrue ( "Method \"" + fName + "\"          ", false);
    }
    try {
        runMethod.invoke (this, new Class [0]);
    }
    // InvocationTargetException    IllegalAccessException
}
```

```
JDK 1.1      API
              public
              NoSuchMethodException
              가 가
```



3.5 -TestSuite



```
public interface Test {
    public abstract void run (TestResult result);
}
```

```

TestCase Composite Leaf
      가
      TestSuite
TestSuite

```

```

TestSuite Test {
    private Vector fTests = new Vector ();
}

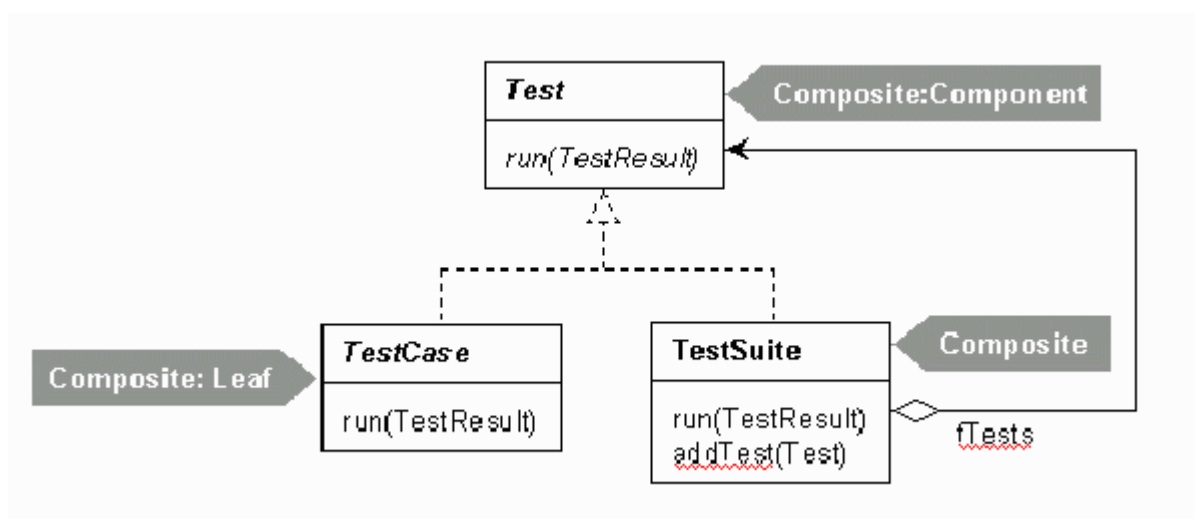
```

```
run ()
```

```

public void run (TestResult result) {
    for (Enumeration e = fTests.elements (); e.hasMoreElements ();) {
        Test test = (Test) e.nextElement ();
        test.run ();
    }
}

```



가 addTest

```

public void addTest (
    ) {
    fTests.addElement (test);
}

```

```

가
TestCase TestSuite Test
      TestSuite
      TestSuite
TestSuite

```

```

public static Test suite()
{
    TestSuite suite = new TestSuite ();
    suite.addTest (new MoneyTest ( "testMoneyEquals"));
}

```

```
suite.addTest (new MoneyTest ( "testSimpleAdd"));
}
```

JUnit

가

static suite () 가

TestSuite 가

"test"

가

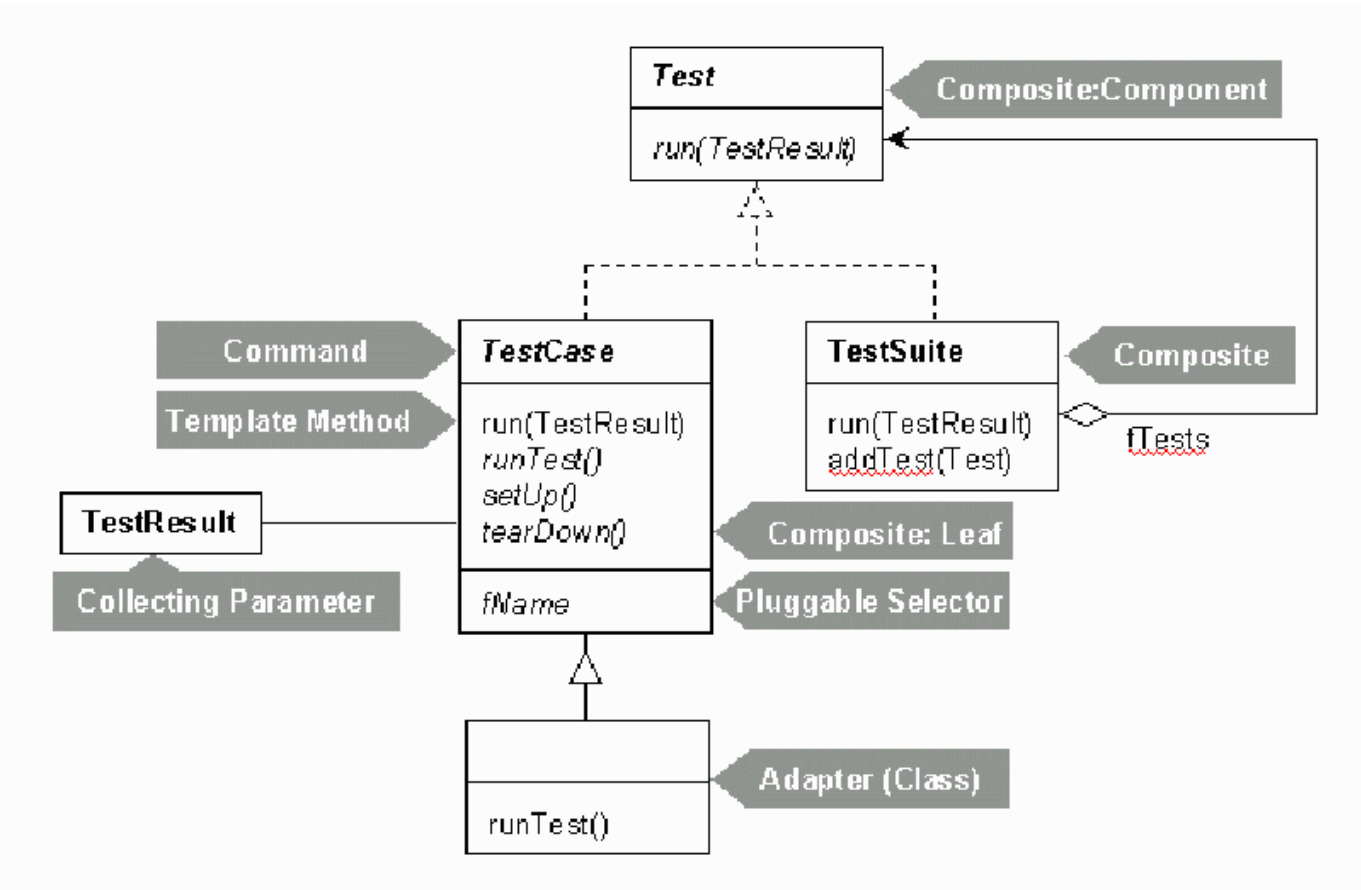
```
public static Test suite ()
{
    return new TestSuite (MoneyTest.class);
}
```

The original way is still useful when you want to run a subset of the test cases only.

3.6

JUnit A Cook's Tour

JUnit

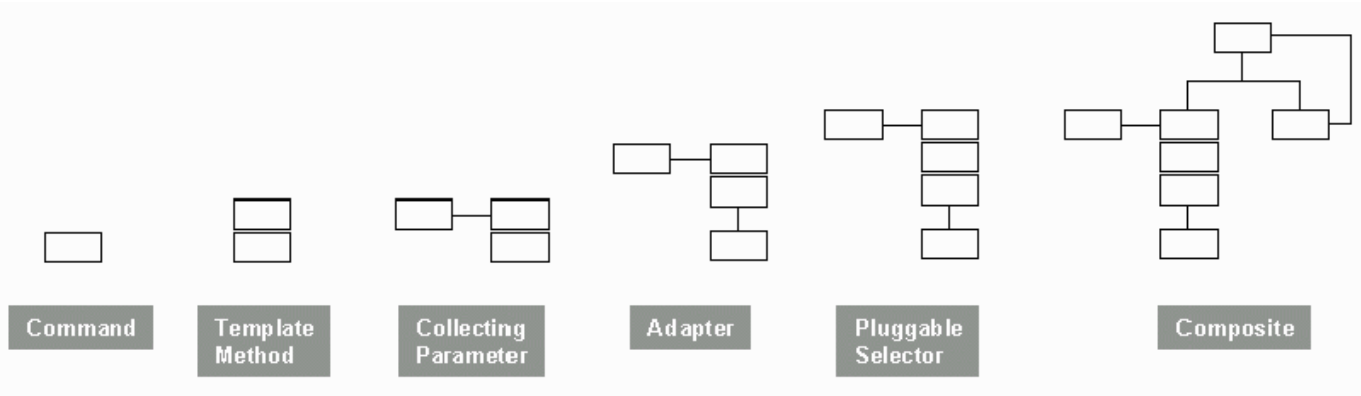


TestCase가 4가

JUnit

Command TestCase Templage Method run

(가 6.)



Composite

Composite가

4.

가

Patterns

Pattern density

JUnit TestCase "가

가 가

가 " "

Eat your own dog food

TestTest 가 ,

JUnit 가

Intersection, not union

```
JUnit
(test.extensions)
가
가
가
가
가
가
가
가
가
가
```

JUnit 가 ,
가 가 .
JUnit, , 가
monomania
().

JUnit <http://www.junit.org>

5.

John Vliissides, Ralph Johnson, Nick Edgar

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